IN THE CLAIMS

Please amend the claims as follows:

1. (currently amended) An image processing method for extracting a thread-like structure ~~(GW)~~ represented within~~on the background in~~ a digital noisy original image ~~(IM1)~~, comprising steps of:

acquiring~~acquisition (1) of~~ the original image data~~, and steps of~~:

extracting~~extraction (2) of~~ pixel strings ~~(A1,A2,.)~~ of a ~~same~~ threadlike structure within the original image data, wherein the phase operation is based on detecting a relative intensity of pixels in a neighborhood of pixels in the digital noisy original image; and

conducting~~operation (4,5) of~~a Phase operation~~(Intra-Set Phase, Extra-Set Phase)~~ in order to automatically generate~~yielding~~one Best String ~~(A)~~ from the pixel strings ~~(INSI,EXSI)~~ for representing the threadlike structure~~(GW)~~.

2. (currently amended) An image processing method as set forth ~~claimed~~ in Claim 1, wherein the step of conducting a~~Phase (4), called Intra-Set~~ Phase operation includes~~, comprises~~ the steps of~~:~~:

~~-~~first forming a String Set with the pixel strings;

second ~~and, inside said String Set,~~ forming ~~(43)~~ a set of Candidate Paths ~~(IM4)~~ linking couples of End-Points of the pixel strings within said string set~~;~~ and

~~-~~selecting ~~(44)~~ one Best Candidate Path as the Best String within ~~in~~ the ~~considered~~ String Set ~~(INSI)~~.

3. (currently amended) An image processing method as set forth ~~claimed~~ in Claim 2, wherein the step of conducting a ~~Intra-Set~~ Phase operation further includes~~comprises~~ steps of~~:~~:

generating a set of Candidate Paths from which the best string is selected by implementing a Front Propagation operation upon ~~between~~ the couples of End-Points of the pixel strings inside the said ~~considered~~ String Set ~~for providing a set of Candidate Paths among which the Best String is selected~~.

4. (currently amended) An image processing method as set forth ~~claimed~~ in Claim 1, wherein the step of conducting a ~~Phase, called Extra-Set~~ Phase operation includes ~~comprises~~steps of~~:~~:

_____-determining adjacent couples of pixel strings having opposite End-points,

_____-forming sets of Connection Paths ~~(IM6),~~ outside the pixel strings,

_____-linking the opposite End Points of said adjacent couples,

_____-selecting respective Best Connection Paths for linking the couples of pixel strings,

and

_____forming one Best String from the linked pixel strings ~~(EXSI)~~.

5. (currently amended) An image processing method as <u>set forth</u> ~~claimed~~ in <u>Claim</u> ~~Claims~~ 4, wherein the <u>step of conducting a</u> ~~Extra-Set~~ Phase <u>operation further includes</u> ~~comprises~~ steps of ~~:~~

_____<u>generating sets of connection paths using a</u> Front Propagation <u>operation, which front</u> propagation <u>operation operates upon</u> ~~between~~ the couples of opposite End-Points of the pixel strings, outside the pixel strings, <u>and</u>

_____<u>utilizing</u> ~~for providing~~ the sets of Connection Paths <u>to select</u> ~~among which~~ the Best Connection Paths ~~are selected~~.

6. (currently amended) An image processing method as <u>set forth</u> ~~claimed~~ in <u>Claim</u> 1 ~~one of Claims 1 to 5~~, <u>further</u> comprising steps of:

_____<u>extracting</u> ~~extraction (2) of~~ elementary pixel strings ~~(A1,A2,.)~~ associated in string sets (SA) <u>deriving from</u> ~~, each of a~~ <u>the</u> same threadlike structure ~~(IM2)~~;

_____<u>conducting a</u> ~~operation (4) of~~ a First Phase ~~(Intra-Set Phase)~~ <u>operation which</u> automatically generates one Best String ~~(A)~~ per string set<u>, wherein said Best String represents</u> ~~(INSI) for representing~~ the threadlike structure ~~(GW)~~.

7. (currently amended) An image processing method as <u>set forth</u> ~~claimed~~ in Claim 6, <u>further</u> comprising <u>the step</u>step~~s~~ of:

_____<u>conducting</u> ~~operation (5) of~~ a Second Phase <u>operation by linking Best Strings to</u> automatically <u>generate</u> ~~yielding~~ one Final Best String<u>, which final best string represents</u> ~~(FBS) by linking Best Strings (EXSI), for representing~~ the threadlike structure ~~(GW)~~.

8. (currently amended) An image processing method as <u>set forth in Claim 6</u>~~claimed in one of Claims 6 or 7~~, wherein the <u>step of conducting the</u> First Phase~~(Intra-Set Phase~~ <u>operation includes the steps of:</u> ~~comprises the steps of :~~ <u>first forming,</u> inside a considered string set, ~~formation of~~ couples of End-Points of elementary strings,

        <u>second</u> forming set of Candidate Paths ~~(IM4)~~ linking said couples of End-Points, and

        <u>selecting</u>~~selection (44) of~~ one Best Candidate Path as <u>the</u> Best String ~~(INSI)~~.

9. (currently amended) An image processing method as <u>set forth</u> ~~claimed~~ in Claim 8, wherein the <u>step of conducting the</u> First Phase ~~(Intra-Set Phase)~~ <u>operation further includes the step</u>~~comprises steps of~~:

        <u>conducting a</u> Front Propagation <u>operation</u> between the couples of End-Points of the elementary strings inside a considered String Set <u>in order to generate</u> ~~for providing~~ a set of Candidate Paths <u>from</u> ~~among~~ which the Best String is selected.

10. (currently amended) An image processing method as <u>set forth</u> claimed in <u>claim</u> ~~one of Claims~~ 6 ~~to 9~~, wherein the <u>step of conducting the</u> Second Phase ~~(Extra-Set Phase)~~ <u>operation further includes the steps of</u>~~comprises~~:

        <u>first forming couples of Best Strings</u> outside each string set <u>by using,</u> ~~formation of couples of Best Strings and of~~ couples of opposite End-Points of said couples,

        <u>second forming</u> ~~formation of~~ sets of Connection Paths ~~(IM6)~~ linking said opposite End Points, <u>and</u>

        <u>selecting</u> ~~selection of~~ one Best Connection Path for linking each couple of Best Strings and ~~of~~ one Final Best String among the Best Strings connected by <u>the</u> Connection Paths ~~(EXSI)~~.

11. (currently amended) An image processing method as <u>set forth in Claim 10</u>~~claimed in Claims 10~~, wherein the step of conducting ~~comprising in~~ the Second Phase ~~(Extra-Set Phase)~~ <u>includes the further</u> steps of~~:~~

conducting a Front Propagation operation between said opposite couples of End-Points of the Best Strings outside the String Sets in order to generate for providing the sets of Connection Paths, from which the among which the Best Connection Paths are selected.

12. (currently amended) An image processing method as set forth in Claim 6claimed in one of Claims 6 to 11, wherein the step of conducting a first phase operation includes thatcomprising, prior preliminary to the implementing the first phase operationPhase that is first carried out, a step of calculating a ridgeness calculation to form, forming (3) a ridgeness data image (IM3), where including ridge pixels showing show an intensity gradient that is maximum in a first determined direction in its neighborhood, and showing show a lower intensity gradient in a direction perpendicular to said first direction, such that so as the greater the number of pixels that verify themore an image structure is formed of pixels verifying this gradient property are found in the formed image structure, the higher more the ridgeness measure of the image structureis high.

13. (currently amended) An image processing method as set forth claimed in Claim 12, further comprising the steps ofcomprising:

first generating First Potential Image (IP1) from the ridgeness data image, where the potentials of the pixels derived from belonging to the considered string set are set to first values, which first values are lower than a given predetermined value, the potentials of pixels of the other string sets are set to second values, which second values are higher than said predetermined value, and the pixels located outside the string sets are attributed potentials whose values are function of their ridgeness data values,

second generating a Front Propagation operation (43) for propagating on the lower potentials in the First Potential Image (IP1), and

forming the Candidate Paths (IM4) between couples (41) of End-Points of the elementary strings.

14. (currently amended) An image processing method as set forth in Claim 6claimed in one of Claims 6 to 13, further the comprising steps of:

determining ~~the determination (51) of~~ the opposite End-Points of couples of Best Strings,

forming~~the formation (52) of~~ a Second Potential Image ~~(IP2)~~ from the Best String image ~~(INSI)~~, wherein ~~where~~ all the string pixels are attributed ~~higher~~ potentials, which are higher than a given predetermined potential value, and the other pixels are attributed ~~lower~~ potentials, which are lower than ~~the~~a given predetermined potential value,

conducting a Front Propagation operation for ~~(53)~~ propagating ~~on~~ the lower potentials in the Second Potential Image, ~~(IP2)~~ and

forming the Connection Paths ~~(IM6)~~ between couples ~~(51)~~ of opposite End-Points of the couples of Best Strings.

15. (currently amended) An image processing method as set forth ~~claimed~~ in Claim 6~~one of Claim 6 to 14~~, wherein the selection operation of the Intra-set and Extra-Set Phases are conducted in accordance with ~~operated using criterions based on~~ the height of ridgeness of the structures of the Paths.

16. (currently amended) A system comprising a suitably programmed computer or a special purpose processor having circuit means, which circuit means are arranged to process image data according to the method set forth in claim 1~~as claimed in any one of the preceding Claims~~.

17. (currently amended) An examination apparatus comprising:

~~having~~ means for acquiring medical digital image data, and

~~having~~ a system having access to said medical digital image data for carrying out a processing method as set forth in Claim 1~~according to one of Claims 1 to 15~~, and

~~having~~ display means for displaying the medical digital images and the processed medical digital images.

18. (currently amended) A computer program product comprising a computer-readable medium, said product comprising a set of instructions for carrying out a method as set forth in claim 1~~claimed in one of Claims 1 to 15~~.